**Department of Energy**
Idaho Operations Office
850 Energy Drive
Idaho Falls, Idaho 83401-1563

December 12, 2000

Stephen Allred, Director
Department of Environmental Quality
1410 N. Hilton
Boise, ID 83706

SUBJECT: WAG 7 RI/FS Meeting – (EM-ER-232-00)

Dear Mr. Allred:

I believe our meeting in Pocatello on November 15, 2000, was productive and I look forward to our meeting with you in Boise on December 19, 2000. In preparation for that meeting, our staffs have interacted and enclosed are a proposed agenda (Enclosure 1) and, at your request, a brief paper reflecting WAG 7 RI/FS technical issues of concern prepared by your staff and our INEEL responses to those issues (Enclosure 2). Your review of the agenda and issues paper would be appreciated. I will be pleased to receive or discuss with you any comments you may have concerning either enclosure prior to our meeting. We will make any adjustments you may deem appropriate. Presently, I will be accompanied by Lisa Green and Susan Stiger on the 19th. I look forward to our meeting.

Sincerely,

Warren E. Bergholz
Deputy Manager

Enclosures

Enclosure 1

RWMC (WAG 7) Priorities Meeting Agenda
December 19, 2000

- Review/discussion of WAG 7 RI/FS technical issues identified by DEQ staff
- Roundtable discussion of remedy options being considered in RI/FS
- WAG 7 progress update
- Identify follow-on actions/issues

Enclosure 2

## Response to Division of Environmental Quality Difference of Opinion

## RE: OU 7-13/14 Remedial Investigation/Feasibility Study

1. **Risk Assessment—DEQ believes DOE's risk assessment modeling assumptions are flawed and unrealistic. DEQ believes additional field work involving actual waste loading and contaminant distribution (e.g., through coring) is necessary to develop appropriate model inputs.**

   DOE's risk assessment modeling assumptions are not flawed and unrealistic. Modeling is based on the following:

   - Source data (waste form and concentrations)
   - Release rate (rate at which contaminates are released from the source)
   - Mobility of contaminants.

   Background:

   - Source data—The mass of the material received from the Rocky Flats Plant (RFP) was derived from conducting a mass balance of the actinides processed. The mass of actinides shipped to the RWMC equals the total mass controlled by RFP, less the mass incorporated into weapons, and the residual mass remaining at RFP. The trailer load lists, drum inventory, and chemical analysis information are used to distribute the mass to specific pit locations within the RWMC. Probing data confirms the specific locations within a pit.
   - Release rate—Release rates will be validated from those rates from the contaminant vertical profile obtained from Type A probes, chemical analyses of leachate and soil vapor samples from the Type B probes, shallow soil gas surveys coupled with surface release measurements made via flux chambers and inventory, and disposal location information.
   - Mobility—Contaminant mobility will be determined using the same approach as described for release rates.

   While coring can be used to determine source, it is estimated that to determine the source within a 90% confidence limit for a disposal site, more than 1,000 cores would be required. It is believed that the source data derived from the RFP mass balance information are adequate and that an extensive coring campaign will not improve the accuracy of the source data and is not a cost effective.

   Also, while coring could be used to develop both release rate and mobility information, probing can provide the information, suitable for modeling from probing. Probing can also

provide more of the required information, sooner and at a much reduced cost (leachate and soil gas samples can be taken over time while cores only provide instantaneous information).

1. **Risk Assessment—DOE's reliance on the waste inventory database alone could result in significant underestimation of waste quantities and curie content and resulting risk. External evidence (e.g., failure to account for drum overloading known to have occurred at Rocky Flats, previously identified inaccuracies in inventory) indicates that DOE's reliance on inventory records is misplaced. The source term used in the modeling also results in dilution of areas containing high concentrations of waste.**

   The RFP mass balance data are accurate and provides an adequate estimate of the source. Deriving the source data from a mass balance rather than subsurface sampling does not "underestimate the waste quantities." Further, such an approach does not depend on drum count or drum chemical assay; therefore, specific "drum overloading" is not a factor.

   Background

   Also, an approach that would concentrate contaminants in localized areas may actually produce lower modeled contaminant concentrations in the aquifer. Water is the only transport medium to the aquifer, and only a finite volume of water can move through the waste zone. If the waste is modeled as distributed in localized areas of high concentration, as suggested by others, mass transport to the aquifer would be controlled by solubility limitations in those areas, thereby effectively reducing the mass reaching the aquifer . Consequently, DOE's approach to the source term in the modeling results in the most conservative and appropriate estimate of risk.

1. **Risk Assessment –DEQ also believes the $K_d$ DOE uses is too high given available information.**

   The plutonium $K_d$ used in the Interim Risk Assessment was experimentally determined using interbed material collected from wells drilled at the RWMC in 1994. The value used was the most conservative (lowest) of the values measured in the studies. Because of continued concerns over the $K_d$ value to be used in the baseline risk assessment, additional $K_d$ studies are being conducted with INEEL interbed material collected in the FY-99. The EPA guidance (U.S. Environmental Protection Agency, 1999, *Understanding Variation in Partition Coefficient, Kd, Values*, EPA 402-R-99-004) specifically states a preference for site-specific data over default values.

2. **Remedial Investigation—DEQ believes field verification (e.g., through coring, waste characterization, and contaminant transport data collection) in addition to probing is necessary to develop sufficient information regarding the nature and extent of contamination, including the distribution and migration of transuranic elements. (Also see the risk assessment discussion above.) Probing will not distinguish large and small quantities of transuranics. It will not provide data below a depth of 20 ft and may not provide data below 4 ft in some areas. Leachate data require other physical data to calibrate.**

Verification of probing-derived waste characterization and contaminant transport data, through coring, will not reduce the uncertainty in the probing data. The cores will only interrogate a small volume of waste at one instance in time. Samples of leachate and soil vapor from Type B probes are representative of larger areas and can be collected periodically.

Background

Determination of small quantities of transuranics in the core samples will not be possible because of background radiation from the glove box where the analysis of the core sample takes place.

Any VOC data collected from a core will be qualitative at best because the cores are opened and sub-sampled in a glove box under negative pressure. This activity will volatilize a portion of the VOCs, making quantitative measurements inaccurate. The instrumented probes, compared to core sampling, provide more information, over a larger area of the SDA with better accuracy.

Probing can distinguish between large and small quantities of transuranics and provide vertical profiles better than coring. Coring may not produce a full sample recovery and what sample is recovered is disturbed.

While a few of the earlier probes without the tip modification did not penetrate to basalt, present probing is obtaining full penetration. The modified probe tip has successfully penetrated the hardened soil layer, and the probes are penetrating to the basalt interface. Currently, the deepest basalt interface encountered has been at a depth of 26 ft. Existing environmental monitoring program has been intensified and is collecting data from the basalt vadose zone beneath the SDA. The RWMC environmental monitoring network has been nearly doubled over the last two years. The ongoing environmental monitoring will detect migration into the basalt.

2. **Remedial Investigation—The agencies need to agree on data objectives prior to probing campaigns, unlike DOE's unilateral probing of Pits 4 and 10.**

The need to obtain probing information in Pits 4 and 10 was identified in the 1998 DEQ-approved Work Plan Addendum and again in the May 1999 DEQ-approved Work Plan Addendum. Consequently, the probing activities in question were part of DEQ approved work. DOE, as the performing agency, retains the right to rearrange schedules to optimize utilization of its resources and reduce costs.

2. **Remedial Investigation—DOE has not provided actual data to support its recent dismissal of criticality concerns, in either the short or long term, in the Subsurface Disposal Area. DOE also needs to explain the impact of this determination on the evaluation of remedial alternatives.**

DOE's criticality analysis was presented to the DEQ in the October 2000 agency meeting in Idaho Falls. No DEQ concerns were recorded. Another criticality meeting is scheduled in

early December to address EPA criticality concerns. If DEQ has any additional criticality concerns, they can be addressed in that forum.

The feasibility study will examine criticality issues for the remedial alternatives. This analysis is currently ongoing.

3. **Feasibility Study—DEQ believes it is necessary to demonstrate retrieval technology, evaluate ex situ treatment other than supercompaction of containerized waste (the AMWTP treatment), and perform treatability studies for in-situ grouting and in-situ vitrification on INEEL waste to provide sufficient information to evaluate and compare the cost and implementability of potential remedies. DOE does not appear to have a sound basis for determining cost on a per unit basis necessary to compare alternatives.**

   In accordance with to the National Contingency Plan (NCP), the purpose of the feasibility study is to "ensure that appropriate remedial alternatives are developed and evaluated such that relevant information concerning the remedial action options can be presented to a decision-maker and an appropriate remedy selected." Each FS alternative analyzed is evaluated against nine remedy selection criteria, some of which are very technical and others more qualitative. As remedial alternatives are developed and analyzed against the nine criteria, it will become apparent as to which specific technical details of retrieval or treatment technologies are needed. Detailed work to develop these technical details can then be conducted for any specific aspect of a remedial alternative if needed to allow "an appropriate remedy to be selected."

   Rather than committing beforehand to specific technical evaluations, the intent is to first maximize the use of the substantial body of knowledge from previous applications of a technology, DOE-developed remedial technology assessment techniques, and data from previous and ongoing remedial actions at INEEL and other DOE waste sites.

   In summary, whatever level of detail is required to provide the decision-maker with the information needed to select a remedy will be used. However, it should also be kept in mind that the remedial design phase follows the ROD, and much more detailed investigations including perhaps field demonstrations would then be conducted as appropriate.

   In accordance with the NCP, the purpose of the feasibility study is to provide only sufficient cost and implementability information necessary to select a remedy. The process envisions a remedial design step where engineering details are developed to implement the selected remedy. There is a substantial body of knowledge from commercial applications and DOE-developed technologies for assessing remedial technologies for the SDA. This combined with the abundant data from previous and ongoing remedial actions at other DOE burial sites provides the level of cost and implementability information envisioned by the NCP.

3. **Feasibility Study—Vendor information does not appear to address the cost differential of doing work at DOE sites in general and the INEEL in particular.**

The cost-estimating approach in the OU 7-13/14 RI/FS will incorporate required activities and costs for performing work at the INEEL.

3. **Feasibility Study—DOE has taken conflicting positions about system design requirements that should be resolved prior to evaluations of cost and implementability.**

   Examples of stated "conflicting positions" are required before a response can be provided.